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818. If the contact be made really active and effective, according to the beautiful discovery of Seebeck, by making its temperature different to that of the other parts of the circuit, then its power of generating a current is shown (812). This

enables us to compare the supposed power of the mere contact with that of a thermo contact; and we find that the latter comes out as infinitely greater than the former, for the former

is nothing. The same comparison of mere contact and thermo contact may be made by contrasting the effect of the contact *c*

at common temperatures, with either the contact at *a* or at *b*,

either heated or cooled. Very moderate changes of tempera-

ture at these places produce instantly the corresponding current,

but the mere contact at *x* does nothing.

819. So also I believe that a true and philosophic and even rigid comparison may be made at *x*, between the assumed effect

of mere contact and that of chemical action. For if the metals

at *x* be separated, and a piece of paper moistened in dilute acid,

or a solution of salt, or if only the tongue or a wet finger be

applied there, then a current is caused, stronger by far than

the thermo currents before produced (818), passing from the

iron through the introduced acid or other active fluid to the

platinum. This is a case of current from chemical action with-

out any metallic contact in the circuit on which the effect can

for a moment be supposed to depend (614); it is even a case

where metallic contact is changed for chemical action, with

the result that where contact is found to be quite ineffectual,

chemical action is very energetic in producing a current.

820. It is of course quite unnecessary to say that the same

experimental comparisons may be made at either of the other

contacts, *a* or *b*.

821. Admitting for the moment that the arrangement proves

that the contact of platinum and iron at *x* has no electromotive

force (823, 847), then it follows also that the contact of either

platinum or iron with any other metal has no such force. For

if another metal, as zinc, be interposed between the iron and

platinum at *x*, fig. 65, no current is produced;

and yet the test

application of a little heat at *a* or *b* will show by the corre-

sponding current that the circuit being complete will conduct

any current that may tend to pass. Now that the contacts of zinc with iron and with platinum are of equal electromotive force is not for a moment admitted by those who support the theory of contact activity; we ought therefore to have a resulting action equal to the differences of the two forces, producing